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USING AN EXPANSION ECONOMETRIC MODEL WITH FIVE FACTORS TO IMPROVE QUALITY OF MEASURING IMPACTS OF PUBLIC DEBT ON MACRO ECONOMIC FACTORS - CASE IN VIETNAM

Abstract: *Public debt issues are among vital problems of a nation. It has both positive sides and negative aspects which contribues to the development of a nation. National debt is the debt of the State for development investment, it contributes to promoting economic growth and stabilizing macroeconomic factors. Good public debt management is always among main concerns of many nations, esp. developing countries. However, an increase in excessive public debt will hinder economic growth and adversely affect macroeconomic factors. By data collection method published, statistics, analysis, synthesis, comparison, quantittive analysis to generate qualitative comments and discussion; using econometric method to evaluate quantitative results, the article analyzed and evaluated the impacts of public debt on the macroeconomic factors in the period of 2010-2018 of Vietnam, both positive and negative sides. This is one main purpose of this study. This research paper used a regression model with annual data from 2010-2018, and the results of quantitative research, in a five factor model, show that the increase in public debt has a significant effect on reducing GDP growth with the highest impact coefficient, the second is decreasing the exchange rate and trade balance, finally is a slight decrease in market interest rates and slight increase in inflation. Using an expansion econometric model with the support of Eviews, This research findings and recommended policy also can be used as reference in policy for many developing countries including Vietnam.*

Keywords:*Public debt; GDP growth; Inflationary; Budget deficit; Market interest rate*

1. Introduction

Public debt is the Government's debt to compensate for the deficit of the State budget in order to help the State ensure enough financial resources to fulfill its functions and tasks in socio-economic development, national security, national financial and monetary stability. Up to now, there are several researches which have been done to examine impacts of macro economic factors on national debt; however, in this research paper, we are going to examine the impacts of public debt on macro economic factors in case of Vietnam. In the below section, we will run Eviews through an

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econometric model with five (5) factors to measure impacts of public debt on macro factors such as: GDP growth, inflation, interest rate, exchange rate, etc.

According to the Law on Public Debt Management 2017, our country's public debt includes government debt, government-guaranteed debt and local government debt. Public debt is loans to cover the shortage of the state budget, these loans will have to repay principal and interest when due, the State will have to increase tax collection to pay debts. Hence, public debt is essentially a taxing method first and will be repaid with future tax revenues. Public debt affects macroeconomic factors with both sides, positive and negative.

In the period of 2010-2018, the average annual national budget deficit is about 5% of GDP, public debt has promptly offset this gap, helping the Government to actively manage the State budget, ensuring the implementation of mandate functions. Also, during this period, public debt has contributed to macroeconomic indicators such as: stabilizing the domestic monetary market, interest rates, gradually reducing inflation, stabilizing exchange rates, stabilizing trade balance of import and export, limiting unemployment. . . and has become an additional effective tool for macroeconomic management and administration.

During 2010-2018, the size of public debt increases annually 12,64%, contributing partially to GDP growth rate of 6,21% yearly. Market interest rate also tends to decrease gradully and stablize at average 10% per year. Besides, inflation also has decreased from 18,58% in 2011 down to around 3,5% per year. Exchangerate also is stable at 2% increase annually. Trade balance is also stable and net export is from 1 to 3%. Unemloyment rate is also controlled in about 2%.

On the other hand, national debt also shows negative effects on macro indicators. Increase in public debt during 2010-2018 will lead to risks in economic growth in following periods, also high market interest rate and inflation sduring 2010-2013 which limit domestic investment. It also leads to high demand in foreign currency to repay and high exchange rates, esp. During 2010-2011. Net import also increases, together with ODA loans from lenders.

Looking at the table 1, we figure that when public debt decreased from 2016 to 2018, GDP growth increased and market interest rate also decreased. In addition to, inflation increased and exchange rate has reduced.

Table 1: Public debt and macro economic factors in Vietnam during period 2010-2018 (Source: Ministry of Finance, Bureau of Statistics and authors' calculation; Unit: %)

Year	Public debt increase	GDP growth	Public debt /GDP	Budget deficit /GDP	Market interest rate	Inflation (CPI)	Exchange rate increase (USD)	Exmport	Unemployment
2018	5,00	7,08	60,00	3,60	8,91	3,54	1,29	103	2,00
2017	5,11	6,81	61,40	3,42	10,10	3,53	1,40	101	1,62
2016	10,09	6,21	63,70	5,52	10,15	2,66	2,23	101	1,66
2015	8,55	6,68	61,00	6,28	10,15	0,63	3,16	98	1,89
2014	16,14	6,00	58,00	6,33	10,25	4,09	0,56	102	2,40
2013	17,81	5,42	54,50	6,60	12,25	6,60	1,09	100	2,18
2012	18,08	5,00	50,80	5,36	18,25	9,21	0,18	101	1,99
2011	14,67	5,89	54,90	4,40	18,50	18,58	8,48	91	2,27
2010	18,28	6,78	56,30	5,50	16,25	9,19	7,63	85	2,88

Next, we see in the above table that public debt has decreased from 2012 to 2014, GDP growth increased again, while market interest rate and inflation have reduced, and only exchange rate moved in a different direction (up and down). For developing countries, the annual growth can be considered one of leading macro targets. The government launched thedecision to promote growth by pushingstrong public spending, causing a budget deficit and forcedincreasing borrowing to meet spending needsin the country. In another aspect, risingeconomic growth brings revenue to the national budget, which help reduce borrowing pressure from foreign countries.

This study will calculate and figure out the impacts of national debt on other macro economic factors such as inflation, GDP growth, market interest rate, trade balance and exchange rate.The paper is organized as follows: after the introduction it is the research issues, literature review and methodology. Next, section 3 will cover methodology and data and section 4 presents main research findings/results. Section 5 gives us some discussion and conclusion and policy suggestion will be in the section 6.

2. Body of manuscript

2.1. Research issues

The scope of this study will cover:

- Issue 1: What are the correlation and relationship among many macro economicfactors: public debt, interest rate, exchange rate, inflation and GDP growth?
- Issue 2: What are the impacts of public debt on five (5) macro factors: inflation GDp growth, exchange rate, trade balance and market interest rate?
- Issue 3: Based on above discussion, we recommend some solutions regarding to public debt management in incoming period.

This paper also tests two (2) below hypotheses:

- Hypothesis 1: An increase in public debt will stimulate GDP growth rate, and not much impact on inflation.
- Hypothesis 2: An increase in public debt can reduce pressure in market interest rate.

2.2. Literature review

Checerita and Rother (2010) showed that there is evidence that the annual change o fthe public debt ratio and the budget deficit-to-GDP ratio are negatively and linearly associated with per-capita GDP growth. Cherif and Hasanov (2012) stated that the 2008 global financial crisis caused widespread large deficits and swelling public debt as output collapsed in many countries. Then, Matiti (2013) mentioned that domestic debt reduction could be achieved using proceeds from the privatization programme of public corporations, or the use of externally borrowed resourceswhich are mainly on concessional terms to retire more expensive domestic debt. Dar and Amirkhalkhali (2014) examined the impact of public debt on economic growth in 23 OECD countries classified into four groups in terms of their average debt-to-GDP ratio over the 1996-2007 period. Empirical results indicated that the marginal impact of debt is negative but very small and statistically insignificant in almost all cases.

Baaziz et al. (2015) found out public debt inSouth Africa becomes an impediment to economic growth if it crosses the limit of 31.37% of GDP. Next, Abdullahi et al. (2015) pointed that it is thus instructive government concentrateson external debt signing and management to avoid the ugly experience of the past. Swamy (2015) revealed that real GDP growth, foreign direct investment, government expenditure, inflation and population growth have negative effect on debt.

Finally, Samia and Hanen (2017) revealed that inflation and investment reduce the value of public debt. However, real interest rate, budget deficit and trade openness increase public debt. The study shows also the budget deficit is the most important determinant of public debt in Tunisia. Mohanty and Panda (2019) stated that public debt has an adverse impact on economic growth, a positive impact on long-term interest rate and a mixed response (both negative and positive) on investment and inflation in India. It is also found that the domesticdebt has a moreadverse impact on the economy than external debt in India.

So far, there are some studies have shown impacts of some factors affecting a specific country's foreign debt, or group of countries during different stages of development. While this research paper measures impacts of public debt on macro economic factors in a specific case (Viet nam). Therefore, ability to generalize research results will encounter some restrictions.

Until now, many researches have been done in this public debt field, however, they just stop at giving comments, but not recommend macro policies. Moreover, they just analyze data at a certain point of time in a specific year. Finally, they just analyze impacts of macro factors on public debt, whereas this paper measures impacts of public debt on five macro economic indicators. To meet demand of economic growth, Viet nam government not only uses capital sources in the country, but also relies on external debt from foreign countries.

Within the scope of this paper, we suggest some macro policies for Vietnam government, Ministry of Finance, State Bank and relevant government bodies. We also analyze annual data through out time series from 2010-2018, which shows flucatuations in publice debt, market interest rates, exchange rate and inflation.

3. Methodology and data

This researach paper establishes correlation among macro economic factors by using an econometric model to analyze impacts of public debt on five (5) macro economic factors in Vietnam such as: GDP growth, inflation, interest rate, exchange rate, trade balance, …

In this research, analytical method is used with data from the economy such as inflation in Vietnam and market interest rate, GDP growth rate, national budget deficit. Data are included from 2010 -2018 with annual data (9 observations in total). Data is estimated based on interest rate of State Treasury, lending interest rates of commercial banks such as: Vietcombank, BIDV, Agribank, Vietinbank… (average calculation). Budget deficit data is based on Bulletin of public debt (Ministry of Finance), data source (inflation, GDP) is from Bureau of Statistics. Beside, econometric method is used with the software Eview. It will give us results to suggest policies for businesses and authorities. We build a regression model with Eview software to measure impacts of factors. The increase in public debt in Vietnam is a function with 5 variables as follows, With: x1 for GDP growth rate (g); x2 for inflation; x3 for market interest rate (r); x4 for exchange rate; x5 for export/import ratio:

Y (public debt increase) = f (x1, x2, x3, x4, x5) = ax1 + bx2 + cx3+dx4+ ex5 + k

Besides, this paper also uses anlytical and general data analysis method to measure and generate comments on the results, then suggest policies based on these analyses.This research metod is based on some below hypotheses:

- Hypothesis 1: Public debt and market rate have positive correlation. When public debt increases, market interest rates will increase, and vice versa.

- Hypothesis 2: Public debt and inflation have negative correlation. If public debt increases, inflation will decrease, and vice versa.
- Hypothesis 3: Public debt and exchange rate have negative correlation. If public debt increases, exchange rate will go down and vice versa.

4. Main results

4.1. General data analysis

First, the Figure 1 shows us that Y has a negative correlation with GDP growth.

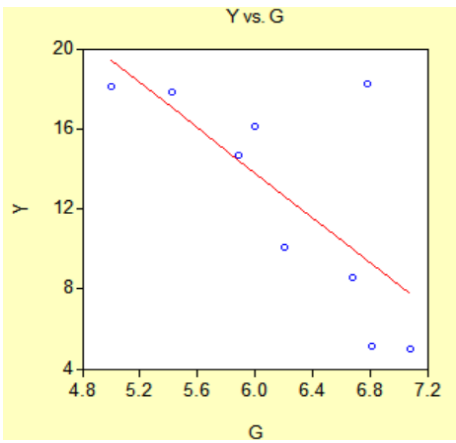

Figure 1. Public debt increase (Y) vs. GDP growth in Vietnam (X)

Next, we find out that, based on the below scatter chart (Figure 2), Y (public debt increase) has positive correlation with budget deficit (BD). Note: budget deficit = collection - spending. Looking at the Figure 3, we also recognize that public debt increase (Y) and market rate (r) have positive correlationship.

We see that, public debt increase (Y) and inflation have postive correlation (Figure 4).

In addition to, the below scatter graph (Figure 5) shows us that public debt increase (Y) ans exchange rate also have positive correlation.

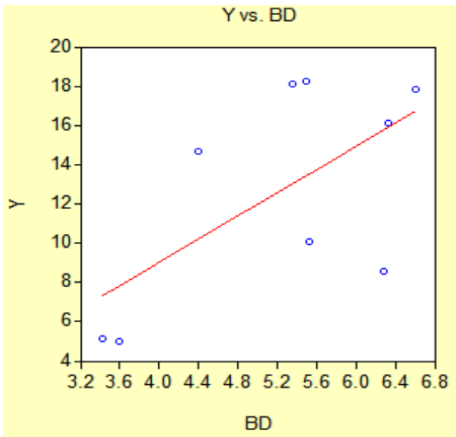

Figure 2. Public debt increase (Y) vs. Budget deficit (BD)

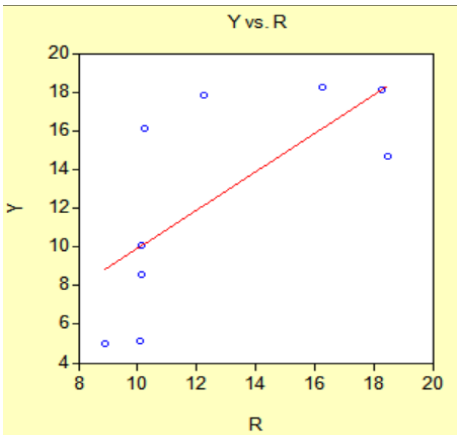

Figure 3. Y vs. Market interest rate

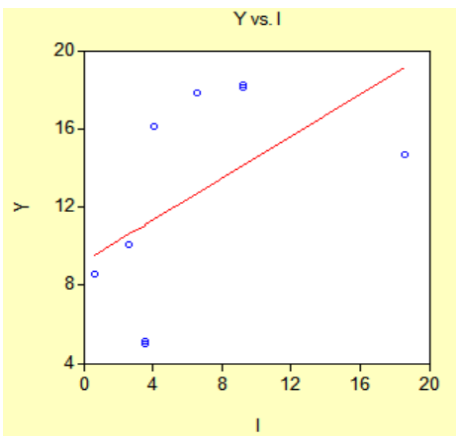

Figure 4. Y vs. Inflation (I)

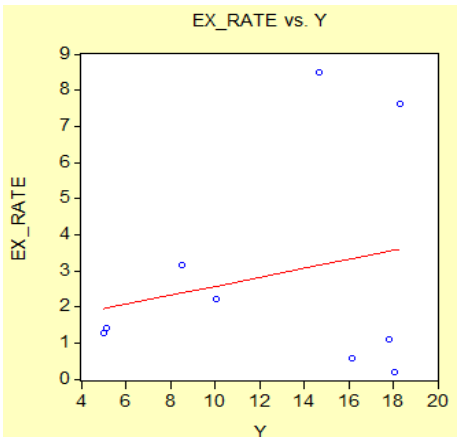

Figure 5. Y vs. Exchange rate (EX_RATE)

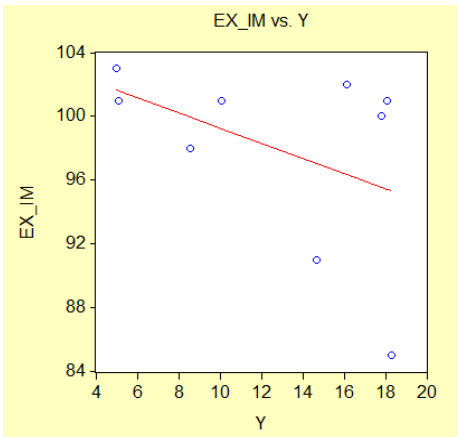

Figure 6.Y vs. Export/Import ratio (EX_IM)

Last but least, Figure 6 shows us public debt increase (Y) and export/import ratio have negative correlation.

On the other hand, we could see statistical results with Eview in table 2 with 5 variables.

Table 2. Statistics for macro economic factors (unit: %)

	Y	g	BD	r	i	EX-RATE
Mean	12.64	6.21	5.22	12.76	6.45	2.89
Median	14.67	6.21	5.50	10.25	4.09	1.4
Maximum	18.28	7.08	6.60	18.50	18.58	8.48
Minimum	5.00	5.00	3.42	8.91	0.63	0.18
Standard dev	5.51	0.70	1.17	3.83	5.40	3.06

The table 2 shows us standard deviation of public debt increase and inflation is the highest (5.51 and 5.4), while santandard deviation of GDP growth is the lowest (0.7).

If we want to see correlation matrix of five (5) macro variables, Eview generate the result in table 3.

Table 3. Correlation matrix for five (5) macro-economic variables (GDP growth, inflation in VN, market interest rate, budget deficit and public debt increase)

			Correlation matrix		
	Y	G	I	R	EX_RATE
Y	1.000	-0.713	0.526	0.690	0.221
G	-0.713	1.000	-0.408	-0.548	0.230
I	0.526	-0.408	1.000	0.872	0.669
R	0.690	-0.548	0.872	1.000	0.550
EX_RATE	0.221	0.230	0.669	0.550	1.000

The table 3 shows us that correlation among five macro variables. An increase in GDP growth and decrease in inflation might lead to a decrease in public debt. It also indicates that correlation between public debt increase (Y) in Viet Nam and market interest rate in Viet Nam (0.69) is higher than that between Y and inflation (0.52) or between Y and exchange rate (0.22).

The table 4 shows us that covarianc matrix among five (5) macro economic variables. Public debt increase (Y) has a negative correlation with GDP growth but has a

positive correlation with inflation (I), interest rate (R) and exchange rate. Hence, an increase in GDP may lead to a decrease in public debt.

Table 4. Covariance matrix for 5 macro economic variables

	Covariance matrix				
	Y	G	I	R	EX_RATE
Y	26.978	-2.435	13.921	12.950	3.320
G	-2.435	0.433	-1.366	-1.303	0.438
I	13.921	-1.366	25.898	16.026	9.831
R	12.950	-1.303	16.026	13.038	5.739
EX_RATE	3.322	0.438	9.831	5.730	8.335

4.2. Regression model and main findings

In this section, we will find out the relationship between five macro economic factors and public debt.

Scenario 1: Regression model with single variable: analyzing impact of public debt increase (Y) on GDP growth (G)

Using Eview gives us results in table 5. Within the range of 9 observations (2010-2018) as described in the above scatter chart 1, coefficient -5.62, when public debt increases 10%, GDP growth will decrease 18%.

Scenario 2: Regression model with 2 variables: analyzing impact of public debt increase on GDP growth (G) and Inflation (I)

Running Eview gives us results shown in table 6.

Table 5. Regression model with single variable

Variable	Coefficient	Std. Error	t-Statistic	Prob.
G	-5.625	2.092	-2.688	0.0312
C	47.55	13.063	3.64	0.0083
R-squared	0.507	Mean dependent var		12.636
Adjusted R-squared	0.437	S.D dependent var		5.509
S.E of regression	4.131	Akaike info criterion		5.868
Sum squared resid	119.47	Schwarz criterion		5.912
Log likelihood	-24.4	F-statistic		7.2255
Durbin-Watson stat	0.867	Prob(F-statistic)		0.0311

Table 6. Regression model with 2 variables

Dependent Variable: Y				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
G	-4.713	2.302	-2.047	0.086
I	0.288	0.297	0.97	0.369
C	40.03	15.238	2.627	0.039
R-squared	0.574	Mean dependent var		12.636
Adjusted R-squared	0.432	S.D dependent var		5.509
S.E of regression	4.148	Akaike info criterion		5.944
Sum squared resid	103.27	Schwarz criterion		6.01
Log likelihood	-23.75	F-statistic		4.053
Durbin-Watson stat	1.391	Prob(F-statistic)		0.077

Hence, this equation shows us public debt increase has a negative correlation with GDP growth in Vietnam, but has a positive correlation with inflation (I). Esp., it is highly negatively affected by GDP growth rate and slightly positively affected by inflation. We measure impact of public debt on inflation (I) as follows: keeping GDP growth (unchaged), if public debt (Y) increases 10%, inflation will increase 8%, with coefficient 0.28.

Scenario 3: Regression model with 3 variables.

Eviews generates statistical results shown in table 7.

Table 7. Regression model with 3 variables

Variable	Coefficient	Std. Error	t-Statistic	Prob.
G	-7.987	3.207	-2.49	0.055
I	-0.352	0.543	-0.649	0.544
EX_RATE	1.234	0.898	1.374	0.227
C	60.92	20.813	2.927	0.032
R-squared	0.691	Mean dependent var		12.636
Adjusted R-squared	0.506	S.D dependent var		5.509
S.E of regression	3.871	Akaike info criterion		5.846
Sum squared resid	74.958	Schwarz criterion		5.934
Log likelihood	-22.3	F-statistic		3.731
Durbin-Watson stat	1.87	Prob(F-statistic)		0.095

The above regression equation shows us that public debt increase has a negative correlation with GDP growth (G) and inflation (I) whereas it has a positive correlation with exchange rate. And the coefficient (with GDP) is the highest, the 2nd highest is with exchange rate. It means that if GDP decreases and exchange rate increases (encouraging export to collect foreign currrency), public debt will tend to increase to compensate deficit and vice versa. On the other hand, when GDP increases and exchange rate decreases, public debt tends to decrease because budget revenue (tax collection) increases. We analyze impact of public debt on exchange rate as follows: Holding GDP growth and inflation (I) unchanged, the above equation lets us know that when public debt (Y) increases 10%,exchange rate increases about 3% (coefficient 1.23).

Scenario 4. Regression model with 4 macro variables:

Eviews presents results shown in table 8.

Table 8. Regression model with 4 variables

Variable	Coefficient	Std. Error	t-Statistic	Prob.
G	-6.776	4.133	-1.639	0.176
I	-0.521	0.665	-0.783	0.477
EX_RATE	1.02	1.048	0.973	0.385
R	0.507	0.945	0.536	0.619
C	48.64	32.07	1.516	0.203
R-squared	0.712	Mean dependent var		12.636
Adjusted R-squared	0.424	S.D dependent var		5.509
S.E of regression	4.18	Akaike info criterion		5.999
Sum squared resid	69.9	Schwarz criterion		6.108
Log likelihood	-21.99	F-statistic		2.472
Durbin-Watson stat	1.788	Prob(F-statistic)		0.201

We find out impacts of 4 macro variables, with the new factor: market interest rate (R), shown in the above equation,public debt increase (Y) still has negative correlation with GDP growth rateand inflation, whereas it has positive correlation with exchnage rate (EX_RATE), and interest rate (R). When inflation goes up, interest rate also increases, this will limit loans for production and reduce business profits, as a result, tax collection decreases, budget revenue declines, and national debt will increase. We analyze impact of public debt on interest rate as follows: Keeping GDP growth (G), exchange rate (EX_RATE) and inflation (I)unchaged, the above equation shows us thatif public debt (Y) goes up 10%, market interest rate (R) will increase about 0.72% (coefficient 0.5).

Scenario 5. Regression model with 5 macro variables:

Running Eviews gives results shown in table 9.

Table 9. Regression model with 5 variables

Variable	Coefficient	Std. Error	t-Statistic	Prob.
G	-7.305	2.299	-3.176	0.05
I	0.416	0.473	0.879	0.444
R	-0.96	0.7	-1.37	0.264
EX_RATE	-1.957	1.107	-1.767	0.175
EX_IM	-1.6	0.507	-3.16	0.05
C	230.27	60.165	3.827	0.031
R-squared	0.933	Mean dependent var		12.636
Adjusted R-squared	0.822	S.D dependent var		5.509
S.E of regression	2.32	Akaike info criterion		4.755
Sum squared resid	16.15	Schwarz criterion		4.887
Log likelihood	-15.4	F-statistic		8.42
Durbin-Watson stat	2.829	Prob(F-statistic)		0.054

Here we see impacts of five (5) macro factors, with the new variable: export/import ratio (EX_IM), the above equation shows that public debt increase (Y) has negative correlation with GDP growth, interest rate, exchange rate and export/import ratio whereas it has positive correlation with inflation. We also recognize impact of external factor (EX_IM) on public debt and other macro factors. When GDP growth declines, export/import decreases, leading to a decrease in interest rate to encourage production loans, it will lead to a decrease in tax (national budget revenue declines) and so, it makes public debt increase. Therefore, recommended policies will aim to increase or decrease public debt, in certain periods, to keep a stable GDP growth, control inflatio at proper rate and stable market intrest rate and exchange rate.We see impact of public debt on export/import ratio as follows: Maintaining GDP growth (G), exchange rate (EX_RATE), interest rate (R) and inflation (I) unchanged, the above equation shows that if public debt (Y) declines 10%, export/import ratio (EX_IM) will increase around 37% (coefficient -1.6).

5. Discussion and further researches

Positive impacts of public debt:

National debt helps the government to ensure financial sources to finance infrastructures for production and life, to invest and develop businesses, esp. private sector, to solve unemployment, to seek foreign funds and stabilize monetary market, etc. It can compensate national budget deficit while it does not make inflation increase. Public debt can be used for public investment, and vice versa, Government's Investment is thought to be the factor that

causes heavy spending pressurein some developing countries, whilethese countries often direct theforeign loans that are used onpurpose of investment purposes.

Negative impacts of public debt:

In case projects from public investment are not managed carefully, it will lead to corruption and wastes of fund to repay public debt, create pressure on high inflation. When the government raises abundant domestic capital, it will lead to a decrease in private credit supply, bad effect on emplyoment, and cause recession. Then, the government mustincrease tax to reduce budget deficit, which reduce investment, slow down production, reduce social welfare, create political and social instability.

Thus, public debt is an extremely important factor, directly and indirectly affecting macroeconomic factors on both sides, positive and negative. The assessment of public debt must be put in the context of relation to the impact of macroeconomic factors such as: economic growth, unemployment rate, inflation rate, real interest rate, exchange rate, trade balance, etc. The important issue is, how the government borrows and manages public debt, what is the purpose of the loan in order to promote positive effects, and at the same time, limit the negative effects of public debt on macroeconomic factors.

Through the regression equation with above 5 macroeconomic variables, different from the previous authors who mainly studied the impact of macro variables such as GDP growth, inflation .... on public debt, this research paper focuses on the opposite direction, I.e the impact of public debt on key macroeconomic variables such as the above analysis with more updated data from 2010-2018. Analyzing the regression equation via Eview shows that an increase in public debt has a significant impact on GDP growth with the highest coefficient of impact, followed by a decrease in the exchange rate, then a decrease in the export / import ratio, a reduction in interest rates and finally a slight increase in inflation.

Data are from observations in the past 10 years, it is partly based on the market economic rules, and the research results are also affected by socio-economic characteristics in Vietnam such as: efficiency of public investment, waste of public investment, enterprise bankruptcy, and investment in areas that increase GDP such as production, electricity, etc. or investing in healthcare, environment and education sectors. We have not yet considered the impact of these factors.

Besides, we can analyze impact of another macro factor, for example, risk free rate when we add this variable into our regression model of public debt. Furthermore, we can add unemployment rate into our econometric model to measure the impact of public debt on this factor.Finally, looking equation in above scenario 5, we find out that public debt has a positive corelation with inflation, therefore it rejects hypotesis 2. Next, public debt has a negative correlation with market interest rate;therefore, it also rejects hypothesis 1. In addition to, by seeing this above equation, public debt has a negative correlation with exchange rate, therefore it supports hypothesis 3.

6. Conclusion and policy Suggestion

Based on data provided by the Ministry of Finance which shows that public debt is expected to be 58.4% of GDP in 2018; Government debt is 50% of GDP. National external debt is 46% of GDP. These numbers are good and shows that public debt is in the control level. Vietnam's public debt situation is still controlled and has positive movements for many reasons. Firstly, the macro fundamentals, GDP growth exceeded the plan and reached the highest level in 11 years. Secondly, Vietnam managed the fiscal policy with many positive results, the state

budget revenue balance was estimated to exceed 7.8% of the estimate, the estimated state budget deficit was lower than the original estimate of 3.7 % of GDP, thereby reducing the need to mobilize government loans.

Next, based on the above data analysis from our regression model, we would suggest the government, Ministry of Finance and State Bank of Vietnam consider to control public debt increase ratio more rationally and suitable with each economic development stage. During low inflation period, for example, after 2015-2017 time, we could increase public debt ratio a little to stimulate inflation. On the contrary, during high inflation time, we can reduce public debt a little to affect positively on GDP growth rate, employment and trade balance. Moreover, during the time in which trade balance does not have impact so much on the economy, relevant government bodies could consider an increase in public debt to reduce inflation (if it is high) an vice versa, a decrease in pubic debt to reduce market interest rate to stimulate production and GDP growth. Manging public debt is a flexible policy which closely connect with socio-economic context. For instance, during high unemolyment period, the government may need to buy a lot of treasury bonds and follow a monetary easing policy to stimulate economic growth.

Next, it is necessary to coordinate synchronously between the management and administration of public debt policies with fiscal policies, monetary policies and other economic development policies to limit the negative effects of public debt. The implementation of public debt policy has a close relationship with fiscal policy, monetary policy and other economic development policies, so the State needs to synchronously implement the above policies to limit the the negative impact of public debt, stabilizing the macro economic indicators. For example, when the Government increases the issuance of Government bonds to raise domestic capital, it will increase market interest rates, limit the supply of credit for private investment, then State Bank of Vietnam may increase refinancing, reducing reserve ratio for commercial banks to increase credit supply and reduce pressure on market interest rates.

Public debt increase is a problem of many nations, esp. developing countries and during economic reccession and crisis, so these governments need to use fiscal policy combined with monetary policies and socio-economic policies to increase unemployment and economic growth, then they could reduce public debt, toward a good debt management.

Finally, this research paper also helps to direct further future researches, for instance, we could add rish free rate and unemployment rate into our above econometric model to measure impacts of public debt on multi macro variables. And indeveloping countries, they can use this above regression model and its results to direct and use as reference to build similar econometric models to serve and implement macro policies to stimulate economic growth and reduce unemployment.

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